

FLINT HILLS NATIONAL WILDLIFE REFUGE

Hartford, Kansas

ANNUAL NARRATIVE REPORT

Calendar Year 1995

U.S. Department of the Interior  
Fish and Wildlife Service  
NATIONAL WILDLIFE REFUGE SYSTEM

REVIEW AND APPROVALS

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Hartford, Kansas

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Calendar Year 1995

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Date

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Date

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1/5/98  
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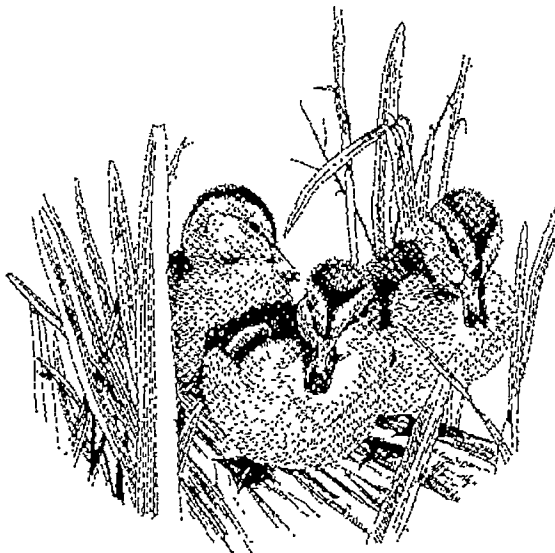
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## INTRODUCTION

The Flint Hills National Wildlife Refuge lies in the broad, flat Neosho River Valley, a native tallgrass prairie region of natural scenic beauty. The refuge is named for the gently rolling Flint Hills just to the west. These fossil studded limestone hills were laid down when seas washed across the region 250 million years ago.

The refuge, established in 1966, consists of 18,463 acres located at the upstream end of the John Redmond Reservoir. The land is owned by the U.S. Army Corps of Engineers and is managed under a cooperative agreement. Refuge habitat consists of 4,572 acres of wetlands, 1,400 acres of open water, 599 acres on the Neosho River and associated creeks, 5,038 acres of cropland, 2,607 acres of grassland, 1,968 acres of woodlands, 2,159 acres of brushlands and 120 administrative, recreation and roadway acres.

The Flint Hills Refuge is managed primarily to benefit migrating and wintering waterfowl in the central flyway. Thousands of ducks and geese flock to the area during the spring and fall migrations and many often choose to spend the winters here. A variety of management practices are utilized on the refuge to meet the needs of wildlife. Feeding and resting areas for migratory birds are provided through aggressive moist soil and cropland management programs. In addition, mowing and prescribed burning are used to provide food and cover for waterfowl and resident species as well. Along with large numbers of migrating birds the refuge is also a haven and often a permanent home for white-tailed deer, turkey, bobwhite quail, greater prairie chicken and an assortment of other mammals, birds, reptiles and insects.

Flint Hills Refuge is readily accessible by turnpike and interstate highways, lying just eight miles south of I-35 in eastern Kansas. Large cities such as Wichita, Kansas City and Topeka are within 100 miles of the refuge. Nearly 1.5 million people live within a 100 mile radius.

In addition to the lands managed by Flint Hills NWR, the Corps of Engineers has licensed the Kansas Department of Wildlife and Parks to manage 1,472 acres adjacent to the Refuge. This land is known as the Otter Creek Game Management Area and is managed primarily for bobwhite quail, mourning dove, greater prairie chicken, cottontail rabbit, squirrel, and white-tailed deer.

The 3.05 billion dollar Wolf Creek Nuclear Power Plant, located eight miles east of the Refuge, was put into commercial operation on September 3, 1985. The "nuke," which sends most of its electricity to Kansas Gas and Electric and Kansas City Power & Light, has a cooling reservoir of 5,500 acres, which has open water year-round. Wolf Creek has contracted with the Kansas Water Office for the majority of the storage capacity of John Redmond Reservoir. To transfer this water from John Redmond to Wolf Creek, two 36" pumps and pipelines are located below the base of the John Redmond Dam. Wolf Creek Lake is closed to public access and is used extensively by waterfowl. However, discussions continue on the possibility of a joint effort between Kansas Department of Wildlife & Parks, Coffey County and the Wolf Creek Nuclear Operating Company to open the lake to public access.

## A. HIGHLIGHTS

Station Experiences Change In Managers (Section E.1).

A Year Of Weather Extremes, Near Record Flooding Followed By Severe Drought Conditions (Section B1).

## B. CLIMATIC CONDITIONS

The year was below normal in terms of precipitation with 30.04 inches of moisture received which is 5.97 inches lower than the average 36.01 inches. However, spring and early summer rains caused significant flooding and the third highest pool elevation in the history of John Redmond Reservoir. A pool elevation of 1067.93 was recorded on June 13, 1995 resulting in 90% of the refuge being flooded. In sharp contrast, drought conditions prevailed from September through December with far less than average precipitation recorded.

The extensive flooding resulted in two separate floods during the year. Early moist soil management and farming plans were essentially scrapped as water covered the refuge during late May, June, and early July. An early frost which occurred on September 25 did not compliment a late planting season caused by the floods. Consequently, it was a very poor year in terms of crop and moist soil plant production. Poor forage conditions resulted in waterfowl use far below average.

Weather and pool elevation information is obtained from the official U.S. weather station operated by the Army Corps of Engineers at the John Redmond Reservoir, eight miles southeast of refuge headquarters. Rainfall amounts are also measured in the headquarters area.

Table 1. Monthly Precipitation, Temperatures and Pool Elevations CY 1995

Month	Precip. Inches			Temp °F		Pool Elevations	
	Total	Norm	Snow	Max	Min	Max	Min
Jan	.58	.90	1.50	57	-0	1040.99	1039.05
Feb	.05	1.04	.75	75	10	1039.15	1038.92
March	1.79	2.30	.06	81	5	1042.68	1039.01
April	2.53	3.02	.00	81	32	1040.35	1038.09
May	6.54	4.31	.00	81	35	1065.56	1038.95
June	5.06	5.71	.00	92	52	1067.93	1058.06



Month	Precip. Inches			Temp °F		Pool Elevations	
	Total	Norm	Snow	Max	Min	Max	Min
July	4.52	4.31	.00	99	53	1054.52	1039.41
Aug	3.77	3.93	.00	97	63	1042.56	1039.13
Sep	1.62	4.39	.00	96	29	1039.20	1038.96
Oct	2.04	3.20	.00	87	30	1039.21	1038.97
Nov	0.06	1.77	.00	68	8	1039.02	1040.43
Dec	1.48	1.13	.00	70	1	1039.63	1038.91
Totals				Extremes		Extremes	
	30.04	36.01	2.25	99	+1	1067.93	1038.09

John Redmond Reservoir construction began in 1959 and was placed in flood control operations in 1964. The first flood occurred in June 1965 with a peak elevation of 1062.40 Mean Sea Level (MSL).

The U.S. Army Corps of Engineers (COE) records daily pool elevation and has records from 1964 to the present. This pool elevation data is helpful in analyzing both the extent and the frequency of flooding on the wildlife refuge. All planning decisions must be made within the context of past records on the extent of flooding, the duration of flooding, the time of year flooding occurs, and the frequency of floods for all portions of the refuge.

The Neosho-Cottonwood drainage basin provides the water supply for the Flint Hills NWR and John Redmond Reservoir. The conservation pool for John Redmond Reservoir is 1039 MSL. At 1042 MSL, 25% of the refuge is under water while 90% of the refuge land is flooded when the pool elevation reaches 1067 MSL.

The COE records reveal the following information of total days, for the last ten years, that conservation pool elevations were above 1045 MSL. The 1045 elevation is used because no significant cropland flooding occurs below this level (Tables 1 and 2).

Table 2. Total days during the last twelve years that conservation pool elevations were above 1045 MSL.

Year	Total Days	Lake Elevations Peak
1995	66	1068
1994	8	1047
1993	97	1068
1992	80	1057
1991	1	1041
1990	52	1055
1989	8	1048
1988	11	1052
1987	27	1051
1986	35	1064

#### D. PLANNING

##### 2. Management Plans

The 1995 Pesticide Use Proposals were finalized in January.

The Neosho River Basin Advisory Committee finalized a lake level water management plan during meetings held in January. The plan approved by the State Water Board intends to utilize draw downs and rises in water levels within John Redmond Reservoir to improve wildlife habitat on the refuge.

A Public Use Review was completed by Chad DeVore outlining a plan to upgrade signing, kiosks, informational leaflets and trails.

Station Safety inspections were conducted by Kevin Jensen at Marais des Cygnes and Flint Hills refuges on April 10 and 11 respectively.

##### 4. Compliance With Environmental and Cultural Resource Mandates

Several archaeological surveys were conducted on the area

within the flood pool of the John Redmond Reservoir prior to its construction. All sites are located on quad maps which are used when planning refuge construction projects. In addition, an archeological clearance form, provided by the regional office, has been modified for use in Kansas and is used in all private lands activities.

#### E. ADMINISTRATION

##### 1. Personnel

Jerre L. Gamble, Project Leader, GS-0485-12/03, PFT  
 Terry D. Kostinec, Supervisory Refuge Operations Specialist,  
 GS-0485-09/02, PFT  
 Shannon R. Fennell, Administrative Support Assistant,  
 GS-0303-06/02, PFT  
 Lyle L. Hancock, Biological Science Technician,  
 GS-0404-07/04, PFT  
 James M. Minnerath, Biological Science Technician,  
 GS-0404-06/02, PFT  
 Ron E. Thuma, Maintenance Worker, WG-4749-08/05, PFT  
 Gerald K. Laws, Engineering Equipment Operator,  
 WG-5716-08/05, PFT  
 Craig Middleton, Biological Science Technician,  
 GS-0404-05-03, PPT  
 William K. Peterson, Range Technician, GS-0455-04-03, PPT  
 Paul G. Kramos, Biological Science Technician,  
 GS-0404-05/02, PPT, (operates out of  
 Manhattan, KS. Ecological Services office)

Table 3. Five Year Staffing Pattern

Year	Permanent FT	PT	TEMP	Total FTE	YCC	JTPA
1995	7.00	0	3	10.0	4	6
1994	7.00	0	2	8.0	3	5
1993	5.00	0	5	8.0	3	5
1992	7.00*	0	2	8.0	4	6
1991	6.00	0	3	6.85	4	4
*PFT Partners for Wildlife Bio-Tech EOD 12/28/92						

##### 2. Youth Programs

Recruiting for this years YCC program was initiated in February and closed on April 14. Counselors at local high schools were notified in addition to local newspapers. The

number of applications has steadily decreased over the years but we were able to select four enrollees from the applications received. This year's crew consisted of Gennifer Hancock of Hartford, Jason Pankratz from Madison, Sarah Ramiez and Jarrod Slead from Lebo. The crew reported for work on June 6th and was trained in first aid/CPR on the 7th. As always, safety was stressed throughout the season and was adequately covered by supervisor Ron Thuma. Other staff also assisted with supervision. Projects included trail rehabilitation, vehicle maintenance, clearing flood debris from roadways, construction of over two hundred wren and bluebird houses. The crew was also responsible for the care and upkeep of the headquarters lawn and buildings. Volunteer projects included painting playground equipment and trimming trees in the Neosho Rapids city park. Environmental Education included plant identification, interpretation of archeological and geological features along with local historical subjects. The camp ended on July 28th when the kids were given a tour of the John Redmond Dam and treated to a picnic following close out interviews.

Table 4. 1995 YCC Budget

Budget	# En-rollees	YCC Salaries	Staff Costs	Other	Total
\$6,400.00	4	\$3,897.00	\$2,272.00	\$231.00	\$6,400.00

### 3. Other Manpower Programs

As in previous years, the refuge took advantage of other programs providing us with low/no cost bodies to assist with our tasks. Six youths were hired under the Job Training Partnership Act providing us with valuable assistance.

Table 5. Five Year Pattern - Other Manpower Programs

Year	JTPA Program		Green Thumb Program		Community Service	
	No.	Hours	No.	Hours	No.	Hours
1995	6	1440	1	224	0	
1994	4	960	0		0	
1993	6	1440	0		0	
1992	6	1440	1	224		
1991	4	550	1	610	1	124

#### 4. Volunteer Programs

Volunteers are used extensively at this station for various jobs. Numbers of volunteers and hours are presented in Table 6.

Table 6. Five Year Pattern - FWS Volunteers

Year	FWS No.	Volunteer Hours
1995	12	1,570
1994	6	930
1993	11	1,566
1992	19	2,669
1991	14	1,496

Volunteer activities included repairs to a flood damaged nature trail, constructing bluebird/wren nesting houses, assisted with processing waterfowl wings for wingbee program, paint/repair signs, gates, buildings, and yard maintenance, assisted with private lands program, assisted with fish stocking of refuge lake and painted/repainted playground park facilities for local community.

#### 5. Funding

In addition to the regular Operations and Maintenance, Flex Funds and Youth Conservation Corps, this station has an unusual source of funds. A cooperative agreement with the COE allows surplus crops to be sold with the monies reverting back to this station. The funds are processed through the "Bills for Collection" procedure and are placed in Sub-Activity 8260, Proceeds from Sales. For many years 8260 funds have been used as part of base funding as salaries alone have usually been higher than regular Operations & Management funding. This situation was remedied in 1991 when the Refuge received base funding adequate to carry out Refuge functions. This left 8260 dollars available for their intended use - the development and enhancement of Refuge natural resources.

Table 7. Five Year Station Funding Level (Amount \$K)

FY	Oper 1261	Maint 1262	MMS	Flood	8260	9110	9120	1120	Total Budget
95	129.1	123.2	80.0		184.4	35.7	1.0	180.0	733.4
94	162.6	72.4	80.0	95.0	18.0	1.0	60.2	567.9	1057.1
93	164.2	118.0	55.0		70.0	1.0	24.7	150.3	583.3
92	135.1	116.0	73.5		102.8	1.0	39.7	149.5	617.6
91	138.5	116.0	46.0		16.7	1.0	43.5	139.5	501.2

### 6. Safety

On February 22nd, Maintenance Worker Ron Thuma demonstrated the proper and safe operation of the stations new fire pumper unit. Proper and safe use of fire hand tools was also covered along with storage of related equipment and supplies.

Refuge staff were certified in First Aid and CPR by a local Red Cross volunteer on June 1st.

Regional Safety Officer Kevin Jensen conducted a station safety inspection of the Flint Hills NWR facilities along with an asbestos inspection and air sampling of the Marais des Cygnes NWR residence on April 10th and 11th.

Personnel Kostinec, Hancock, Peterson, Minnerath and Middleton completed an aviation safety refresher course held at Quivira NWR on April 18th.

An environmental/safety inspection of refuge facilities was conducted by the Corps of Engineers on 7/18.

Office, shop and vehicle first aid kits were restocked by Maintenance Worker Thuma this year. Out of date supplies were replaced and the kits were stocked to suit refuge needs. Hearing protection muffs were cleaned and new ear pads were installed.

There was one lost time(one day) accident on the refuge during 1995 due to an ankle injury.

A cistern located at Palin Slough was considered a hazard and therefore filled in.

PL Gamble attended Hazardous Materials Safety Training in Grand Junction, CO. from 9/14-9/15.

Equipment Operator Laws received minor burns in his ear from welding on 10/11.

A vehicle accident occurred on the refuge on 10/29, when a private individual slid his car into a refuge entrance sign, resulting in minor damage to the vehicle but destroying the sign. The individuals insurance company paid for replacing the entrance sign.

#### 8. Other Items

ROS Kostinec attended Supervisory training in Denver on 5/1-5/4.

### F. HABITAT MANAGEMENT

#### 2. Wetlands

Refuge wetlands include numerous type I and III natural wetlands along with 25 manageable man made marsh/moist soil units and John Redmond Reservoir. Wetland management on Flint Hills consists of timing the filling and draw down of our moist soil units to encourage plant communities and invertebrates most beneficial to migratory birds. Moist soil units, in most cases, are filled by natural runoff, however, several of our marshes are designed to facilitate pumping should the weather not cooperate with our plans. It is difficult at times to decide to leave the boards out of structures during times of plenty of runoff in order to wait for later rains that may provide optimum gradual water level fluctuation and greater wildlife utilization. Due to severe flooding conditions this year, the moist soil and water plans were not accomplished.

In an effort to provide some food for migrating waterfowl, 658 acres of Japanese millet was aerial-seeded into 8 wetland units during July. Unfortunately, an unusual early frost in September prevented most millet seed from maturing.

ROS Kostinec attended Wetland Reserve training in Salina, KS, on 5/8-5/9.

ASA Fennell and Biotech Minnerath attended a freshwater mussel workshop in Fort Scott, KS, on 8/10-8/11.

Biotech Middleton and ASA Fennell attended a Moist Soil Management course taught by University of Missouri personnel, held at the Marais des Cygnes State Wildlife Area on 9/28.

### PARTNERS FOR WILDLIFE

Private lands staff for the state includes one permanent biological technician (stationed at Flint Hills NWR), one temporary biological technician (stationed at Manhattan, Ecological Services office), and one part-time State Private Lands Coordinator (stationed at Flint Hills).

ROS Kostinec attended a PFW meeting in Manhattan, KS, on 7/27 with Regional Coordinator Rick Dornfeld, Biotech. Greg Kramos and ES Supervisor Bill Gill.

ROS Kostinec and Region 6 PFW Coordinator Rick Dornfeld met with the Lieutenant Governor in Topeka on 8/15 to discuss the PFW program.

A Kansas PFW Program meeting was held at the refuge on 10/11 to discuss responsibilities and future direction. In attendance were Associate Manager Bob Nagel, Regional Coordinator Rick Dornfeld, the newly appointed Kansas PFW Coordinator Jerre Gamble, ES Field Supervisor Bill Gill and Private Lands Biotech Greg Kramos.

The following is a list of accomplishments regarding PFW projects during FY 95:

Project Description	Acres	Number of Projects
Wetland Restoration	1475	8
Wetland Creation	196	12
Prairie Restoration	28	2
Riparian Protection	327	11
Environmental Education	58	3
<b>Totals</b>	<b>2,074</b>	<b>36</b>

### 3. Forests

There are 4,103 acres of woodlands on the refuge, 2,159 acres of which are brushlands. These areas range from mature stands of hardwoods to retired croplands being invaded by woody species.

There has been little or no management of the timber resource in the past, aside from preventing woody vegetation from invading some of the grasslands and wetlands. The more predominant tree species present on the refuge include cottonwood, willow, ash, pecan, red oak, burr oak, pin oak, mulberry, American and Chinese elm, walnut, hackberry and sycamore.



Table 8. Five Year Pattern - Firewood Permits (SUP)

Year	Driftwood Permits	Upland Clearing Permits
1995	0	19
1994	5	3
1993	18	6
1992	5	21
1991	0	30

#### 4. Croplands

Farming operations at Flint Hills NWR were conducted on 3,453.7 acres by 15 farmers under cooperative agreements. A cooperative agreement between the Department of the Army (COE) and the Department of the Interior (USFWS) allows the government share of crops in excess of wildlife needs to be sold. These monies are to be used at the station within five years of receipt. Sub-Activity 8260, Proceeds from Sales, is used to manage these funds not negotiated in the cooperative farming program. The refuge share of corn and Milo crops is left standing in the field while the wheat and soybeans are harvested and sold. Legume crops generally go to the cooperators. Planned crop rotations were not followed due to extensive flooding resulting in late planting dates. Consequently, a short growing season favored crops such as soybeans and fall planted winter wheat.

Table 9. 1995 Cooperative Farming Agreements\*

Standing Crop	# of Cooperators	Acres Planted	Govt Share. Left Standing (Acres)
Corn/Milo	2	130	23.2
Alfalfa	1	58	0
Soybeans	9	1685	3.0
Wheat	14	1642.7	0
Native Grass	0	0	0
Total Acres		3515.7*	26.2
*Includes acreage let on bid in moist soil units and double cropped fields.			

Table 10. Five Year Pattern - Crop Sales (Dollars),  
Fiscal Year

Crop	1995	1994	1993	1992	1991
Corn	\$19,537		\$ 5,301	\$ 4,524	\$ 2,457
Sunflowers					
Milo	\$1,289			\$ 3,274	
Oats					\$ 194
Soybeans	\$78,697		\$41,827	\$42,024	\$38,107
Wheat		\$18,011		\$22,420	\$24,086
Legumes			\$ 1,750		
Total	\$99,523	\$18,011	\$48,878	\$73,483	\$64,844

#### 5. Grasslands

There are approximately 2,107 acres of grasslands on the Flint Hills NWR. These areas were tall-grass prairies dominated by big Bluestem, Indian grass and switch grass. However, major flooding since 1993 has caused significant invasion of annual weeds such as Johnson grass which has proven difficult to control. Due to the status of Johnson grass being a State and County listed noxious weed, many hours of staff time are spent mowing to prevent seed maturity. This activity is recognized as more of an appeasement measure than one of control. Wholesale chemical application within a floodplain has not been a viable option.

Retired farm fields were generally targeted for native grass restoration efforts. Several restoration sites were destroyed due to flood events since 1993. Only a few areas located out of harms way on higher elevated sites will now be considered for native prairie restoration potential.

#### 8. Haying

Several areas (Headquarters, Eagle Creek, Lairds and Horseshoe) were designated for haying this year and bids were solicited through May 15. Only one bid was received in the amount of \$756.13 for the haying of 35 acres located near the Horseshoe Marsh unit. However, the bid was canceled due to flooding.

## 9. Fire Management

Step tests were completed on March 3rd.

ASA Fennell attended Fire Timekeeping Training in Denver on 5/23-5/24.

ROS Kostinec attended Prescribed Fire Planning training in Denver on 6/6-6/8.

No prescribed burns were conducted due to flood conditions.

Eight wildfires were recorded in 1995 totaling 19.2 acres. All were human caused. Only three of these fires required suppression efforts.

## 10. Pest Control

Pest control on the refuge is limited to weeds in crop fields and along roadsides. There have been no insecticides used on the refuge in the past eleven years. The most prevalent problem on the refuge is the state listed noxious weed, Johnson grass. We are mandated by state law to 'control' the species. Control efforts in 1995 consisted of mowing and farming.

The 18 cooperators farming the refuge are getting used to the Service's attempt at reducing/eliminating pesticide use in our farming program. Pesticides approved for 1995 were Beacon, Roundup, Rodeo, Amine 4, Poast and Scepter. Approval for the use of Scepter is on a case by case basis, upon inspection of the field by the refuge manager or his designee.

Cooperators did not apply any chemicals in 1995.

## 11. Water Rights

Flint Hills NWR is located along the Neosho River and Eagle Creek in the flood pool of John Redmond Reservoir which was constructed by the U.S. Army Corps of Engineers as a flood control project. When the reservoir is at normal conservation pool, very little refuge land is inundated. During extreme flooding, however, up to 95% of the area can be covered. Floods of this severity are not all that uncommon (1973, 1985, 1986, 1993 and 1995). Most precipitation is received during the spring and as a general rule, some degree of flooding can be expected in the spring with fall floods being rare.

Three types of water rights are currently in effect at Flint Hills NWR. Two agricultural permits allow the diversion of

water from the Neosho River for irrigation of agricultural crops. Eighteen permits are approved for the diversion of water from the natural flows of tributaries by low profile dikes. Ten additional permits cover pumping of water from the Neosho River or Eagle Creek into constructed and natural wetlands. Approved water rights applications, their type and acre feet authorized, are listed in Table 11.

Although near record flooding was experienced earlier in the year, much drier conditions prevailed during the fall. Water was pumped during part of September and October from the Katy pump site to fill Intermediate Pool, Pintail and Katy marsh units. This was necessary to provide waterfowl adequate feeding and roosting areas. Water was also pumped into Coon Hammond, Horseshoe, Indian Hill, Hartford, Rummel, Hammerton, Maxwell, Lower Bench, and Burgess during the October-November period. Pumping operations were completed on 11/22. Two portable Gator pumps were utilized to pump a total of 689.4 acre feet of water.

Table 11. Water Rights Permits and Types - Flint Hills NWR

WATER UNIT	NO.	TYPE	DIVERSION TYPE	AC/FT
Hartford	39581	Recreational	Pump	500
Troublesome East	39582	Recreational	Pump	110
Pintail	39583	Recreational	Natural Flow	110
Lower Bench	39579	Recreational	Natural Flow	125
Boes	39580	Recreational	Natural Flow	60
Bench	38287	Recreational	Natural Flow	500
Hammerton	38286	Recreational	Pump	180
Hammerton	38285	Recreational	Natural Flow	180
Hartford	38283	Recreational	Natural Flow	125
Beschka	38280	Recreational	Pump	113
Beschka	38282	Recreational	Natural Flow	150
Burgess	38279	Recreational	Natural Flow	225
Burgess	38278	Recreational	Pump	206
Rummel	38284	Recreational	Pump	60
Rummel	38277	Recreational	Natural Flow	25

WATER UNIT	NO.	TYPE	DIVERSION TYPE	AC/FT
Strawn Flats	38281	Recreational	Natural Flow	110
Palin Slough	38273	Recreational	Pump	N/A
Palin Slough	38271	Recreational	Natural Flow	25
Laird's Pond	17608	Recreational	Natural Flow	72
Coon-Hamman	38274	Recreational	Natural Flow	68.5
Coon-Hamman	17606	Recreational	Pump	68.5
Money Penny Pond	17606	Recreational	Natural Flow	6
Troublesome	17597	Recreational	Natural Flow	30
Indian Hill	17601	Recreational	Natural Flow	330
Indian Hill	38275	Recreational	Pump	330
Goose Bend	38276	Recreational	Natural Flow	200
Goose Bend	17609	Recreational	Pump	200
Maxwell	39115	Recreational	Natural Flow	270
Cropland	18429	Agricultural	Pump	N/A
Cropland	18433	Agricultural	Pump	49.4

## G. WILDLIFE

### 2. Endangered and/or Threatened Species

Two federally listed endangered birds are known to occur on the refuge; the bald eagle and the peregrine falcon. Peregrines are observed passing through the area during spring and fall migrations and bald eagles generally arrive along with the waterfowl and spend the winter around the John Redmond Reservoir and surrounding areas. Eagle use of the refuge is monitored as part of our weekly waterfowl surveys and the staff participates in the annual mid-winter eagle survey each January. Populations peaked at 15 birds this year as counted during the above mentioned survey. This represents a below average number which normally ranges between 50 to 100 eagles. The relatively low number can be attributed to an open winter with very little ice resulting in the birds being widely dispersed. The refuge also sponsors an annual Eagle Day each January. Nine participants were treated to a brief presentation on the refuge, a film on eagles and an observation tour. Four eagles were spotted. This was the twelfth consecutive year

we have participated. State Kansas Wildlife and Parks employees and local Audubon members assisted with the event.

There was no eagle nesting activity observed this year.

In addition to the above mentioned species the Neosho Madtom and the flat floater mussel are both listed as threatened and known to occur within the Neosho River drainage.

### 3. Waterfowl

The primary objective of the Flint Hills NWR is to provide a quality feeding and resting area for migrating and wintering waterfowl. The main methods of achieving this goal are agriculture and moist soil management. Current waterfowl use objectives are set at 1,650,000 use days and 3,100,000 use days for geese and ducks respectively. Waterfowl use days and peak populations for the past five years are listed in Tables 12 and 13.

Table 12. Waterfowl Use Days

Year	Geese	Ducks
1995	409,973	2,109,647
1994	1,012,367	1,894,968
1993	1,526,021	883,806
1992	1,688,548	1,667,543
1991	1,112,592	1,163,382

Table 13. Peak Waterfowl Populations

Year	Canada	Snow	White-fronted	Duck
1995	3,000	9,100	4,000	48,750
1994	3,100	20,000	1,900	44,550
1993	2,500	31,000	650	16,400
1992	3,500	44,000	775	39,095
1991	1,650	24,500	560	19,975

As can be seen from the above tables, numbers and use days can vary, sometimes dramatically. This is not surprising considering the management of the Corps of Engineer area and

the increased wet acres due to flooding. Waterfowl numbers are still well off the use objectives, particularly this year since much of the desired vegetation was destroyed by the flood.

Refuge personnel participated in the statewide mid-winter waterfowl survey on January 4th.

The fourth Annual Central Flyway Wingbee was hosted by the refuge the 14th through the 18th of February. The event was very successful due in large part to the efforts of bio-tech Lyle Hancock. Nearly forty individuals from state and federal agencies participated. 24,128 waterfowl parts were examined.

Waterfowl counts are conducted weekly throughout the use season. Twice a month the surveys are coordinated with the state waterfowl surveys to reduce costs, increase coverage and maintain our excellent working relationship with the Kansas Department of Wildlife and Parks. We also participate in the statewide mid-winter duck and goose population surveys.

#### 4. Marsh and Water Birds

Moist soil water level management was tailored to accommodate growing populations of egrets and herons. Common and snowy egrets, great blue, little blue and green-backed herons and American and Least Bitterns responded accordingly to the low water and high concentrations of invertebrates. White pelicans, double-crested cormorants and pied-billed grebes are also common and took advantage of the areas.

#### 5. Shorebirds, Gulls, Terns and Allies

The Flint Hills enjoys good numbers of yellowlegs, dowitchers, killdeer and assorted peeps. These birds can generally be found whenever conditions are right. Numbers of gulls using the area continue to rise with peak populations of ring-bills easily eclipsing 100,000 individuals. Franklin's gulls are also common during the migrations. Forster's and black terns are seen regularly at certain times of the year.

#### 6. Raptors

Red-tailed hawks, common nesters on the refuge, are present year-round. Northern harriers, kestrels, turkey vultures and barred and great horned owls are also known to nest. Other species observed during the year include Merlin, Prairie Falcon, Cooper's and Sharp-Shinned hawks, Swainson's

hawk and Rough-Legged hawk. Osprey are also sighted on the refuge several times this year.

#### 7. Other Migratory Birds

Volunteers from the local Audubon Society checked and cleaned bluebird boxes on the refuge which were installed in 1991. About three quarters of the houses were utilized by bluebirds, warblers, wrens or titmice.

Biotech Minnerath assisted with a Christmas bird count on 12/16-12/17. Species observed totaled 79 while individuals totaled 287,421.

#### 8. Game Mammals

Game mammals on the refuge include cottontail rabbit, fox squirrel and white-tailed deer. All of the above animals are plentiful and easily found in suitable habitat. The most popular and visible game mammal on the refuge is the white-tailed deer, although flood waters have temporarily pushed them to higher ground.

#### 10. Other Resident Wildlife

Otters were released several years ago on the Cottonwood River upstream from the Neosho and the refuge. Reports of river otter sightings on the refuge occur about twice a year.

Beaver, always present in the river, moved into several marsh areas with the high water during the year. The animals' peculiar digging habits are causing some problems with our dikes and water control structures. Hopefully they will follow the water as lake levels decrease.

Populations of northern bobwhite quail, Eastern and Rio-Grande cross turkeys, and greater prairie chicken are all present on the Flint Hills Refuge. Upland bird nesting success was very limited this year due to rising water levels that unfortunately coincided with the peak of their nesting season. Ring-necked pheasants, present in small numbers, have never really taken hold here but can be seen or heard fairly regularly. Other residents include coyote, raccoon, beaver, bobcat and opossum. Several sightings and road kills in the area have confirmed the presence of armadillos in this part of Kansas.

#### 11. Fisheries Resources

Responsibility for fisheries management in the Neosho River and John Redmond Reservoir belongs to Kansas Department of



Wildlife and Parks(KDWP). Assistance is provided as needed for management of refuge landlocked fisheries.

In preperation for dirt work, Laird's Pond was held in draw down status following flood conditions. Equipment Operator Laws leveled the bottom of the pond to allow a more thourough dewatering of the unit. The pond can now be effectively drained to remove fish giving us the capability of using the pond as a fish rearing unit.

Biotech Middleton, Range Tech Peterson, and the YCC/JTPA youth workers participated in a fish transfer coordinated by KDWP Fisheries Biologist Leonard Jirak. Due to earlier flooding, undesirable fish species found their way into State rearing ponds. These fish were removed, and the ponds were restocked with saugeye.

Gamefish found in the area include channel catfish, white bass, crappie and flathead catfish.

White bass, which normally run in large numbers in the spring, made a half-hearted attempt this year. Fishing action was far below the legendary runs of the not-so-distant past.

#### 14. Scientific Collections

Water quality testing is conducted by refuge staff at several sites on the refuge throughout the year. Samples are tested for dissolved oxygen, total dissolved solids, pH, alkalinity, hardness and turbidity.

### H. PUBLIC USE

#### 1. General

The Flint Hills NWR surrounds the city of Hartford on three sides and the headquarters is located on the northwest side of town. Because of this, and the fact that four of our staff members live in or near this town of 550, we are very much involved in the community. The refuge assists with, supports, and participates in many community functions and the YCC crew performs tasks as community service projects. Refuge personnel participate in community activities of nearby Neosho Rapids as well as here in Hartford.

Maintenance Worker Thuma closed the north half of the refuge to public entry in October. Closed area buoys were placed in the lake and river by Project Leader (PL) Gamble and Refuge Operations Specialist Kostinec, also in October.

The refuge was 'Officially Closed' from 11/14-11/19 during the infamous Government shut-down due to lack of funds. ROS Kostinec was the 'excepted' employee for the first day, and PL Gamble worked for the remainder of the shut-down, patrolling the refuge and maintaining the marsh pumping operations. The refuge was closed again from 12/15-1/6 when yet another shut-down was declared. PL Gamble worked during the entire shut-down period, patrolling the refuge, sorting waterfowl wings for the Central Flyway Wingbee, sorting mail and answering the phone. Most local people encountered during these shut-down periods were very understanding, but also upset at the loss of recreational opportunities.

There were 52,603 visits to the refuge recorded in 1995. This represents a significant decrease from last year due to flood conditions and government shut-downs.

## 2. Outdoor Classrooms - Students

Many local schools utilize the refuge for outdoor classrooms throughout the year. Visitors from K-12 classes and Boy and Girl Scout troops were given talks/tours as requested as were all other interested groups.

Biotech Minnerath and Range Tech Peterson gave a presentation to 4 students from Haskell Indian College on June 9th.

Range Tech Peterson conducted two interpretive demonstrations during July. One, given on the 14th, was for 28 students and two adults from the Haskell Indian Junior College. The other, given on the 20th, was for 10 students and 4 adults from Emporia State University Educational Talent Search.

Range Tech Peterson gave an interpretive talk to a group of Lebo High School students on 11/09.

## 4. Interpretive Foot Trails

The Headquarters and Dove Roost Trails are the only maintained trails on the refuge. Both trails are interpreted but vandals have removed most of the signs along the headquarters trail. 3,097 visitors used the trails in 1995.

The bridge located on the Headquarters Trail was removed in July due to flood damage. The trail was re-routed until such time that a replacement bridge can be built.

Dozer work and culvert installation was completed in Upper

Burgess in preperation for a new interpretive trail. The trail will be easily accessed from State Hwy. 130 which enters the refuge from the north. A parking lot large enough to accomodate school buses will be constructed adjacent to the trailhead.

#### 6. Interpretive Exhibits/Demonstrations

The following is a partial list of programs and education efforts conducted this year;

ROS Kostinec gave a presentation on the Fish and Wildlife Service to the Kiwanis Club of Emporia on 5/23.

Biotechs Minnerath and Middleton, and ASA Fennell staffed the FWS booth at the Kansas State Fair in Hutchinson September 14-16.

PL Gamble, ROS Kostinec, Biotech Middleton, and ASA Fennell staffed a booth on 9/23 at the local Hartford Harvest Day Celebration. Information regarding National Hunting and Fishing Day and National Wildlife Refuge Week was provided. Approximately 200 bluebird and wren nesting boxes were given to participants that participated in a short wildlife quiz.

ASA Fennell set up a Refuge display to serve as a promotion for National Wildlife Refuge Week at Trading Post located near Marais des Cygnes NWR on 9/24.

ASA Fennell gave an interpretive talk to the local chapter of AARP in Emporia on 12/20.

#### 8. Hunting

Approximately 7,900 acres of the refuge are open to public hunting year-round in conjunction with state seasons. An additional 2,100 acres are open except during the general waterfowl season when the area is closed to all public entry. Permanent sanctuary status exists on 8,220 acres. In 1990 the refuge became a non-toxic shot zone for all shotgun hunting. Waterfowl hunting is normally the highest hunting use on the refuge.

Dry conditions in September resulted in a shortage of shallow water habitat during early teal season. Waterfowl habitat conditions improved following pumping operations during the October-November period. Waterfowl hunter visits totalled slightly less than 500 for 1995. Approximately 350 upland game hunters visited the refuge in pursuit of deer, turkey, dove and quail.

These aforementioned hunter visitor numbers represents close to a 50% reduction in annual average hunter visits. Poor habitat conditions (floods in spring, drought in fall) and two Government shut-downs were responsible for the significant decrease in hunter visits.

ROS Kostinec conducted a Hunter's Safety Course on 8/19-8/20.

#### 9. Fishing

Fishing usually accounts for the majority of the consumptive use visits and 1995 was no exception. 18,650 visits were recorded as anglers tried their luck at catching white bass, catfish, crappie, and saugeye. Spring flooding conditions favored catfishing but nixed the normal white bass run.

#### 11. Wildlife Observation

Wildlife observation tallies the most visits of all for the refuge with a total of 39,500 over the year.

#### 12. Other Wildlife Oriented Recreation

Photography is becoming more popular on the refuge each year and many visitors capture the refuge and its wildlife on film. Campers also use the refuge to enjoy the outdoors in spite of the fact that there are no developed areas.

#### 14. Picnicking

Picnicking visits usually occur in conjunction with another activity but visitors have been known to use the area as a picnic site. 4,750 visits were recorded.

#### 16. Other Non-Wildlife Oriented Recreation

Wild food gathering is permitted on the refuge. Mushrooming for morels and pecan gathering are activities that are very much a part of local custom and culture.

#### 17. Law Enforcement

Three individuals on station currently have law enforcement authority. For the majority of the year individuals and groups are contacted incidental to other duties. Patrols and coverage of the refuge are increased during the hunting season due to increased use and potential for violations. Local residents assist in the LE effort by keeping an eye on the refuge and reporting violations or suspicious activities to refuge officers. Additional coverage of the refuge is accomplished with the aid of two state game wardens assigned

to the counties within which the refuge is located. Violation notices for the past five years are listed in Table 14.

Table 14. Violation Notices - Five Year Pattern

Year	Number of Notices
1995	1
1994	0
1993	2**
1992	5*
1991	9
* Three issued at Marais des Cygnes NWR	
** Two issued at Marais des Cygnes NWR	

The only violation notice issued this year (for littering on county road thru refuge) was turned over to County Sheriff Department.

A suicide victim was reported to and found by the Coffey County Sheriff on 11/22 in a closed portion of the refuge (Mauck Lake area).

As is evidenced by the above table it appears that our LE efforts are paying off. Contacts in the field are now geared toward user awareness and the opportunities to issue Notice of Violations (NOV's) are becoming fewer. However, we also recognize the fact that staff vacancies have resulted in less officer time in the field.

ROS Kostinec attended Refuge Officer Basic School (ROBS) training at FLETC 1/30-2/10.

RM Wiseman and RT Peterson attended LE IN-SERVICE at Marana, AZ. 2/21-2/26 and 2/25-3/03 respectively.

RT Peterson was detailed to the National Bison Range from 8/22-10/10 to assist with LE and firefighting duties. He also regualified with firearms and attended PPCT training during this assignment.

PL & Firearm Instructor Gamble held Firearm Regualifications for KS Refuge Officers and Special Agents at Quivira NWR on 8/25 & 12/15.

ROS Kostinec assisted with the Nebraska Roadblock detail on 10/24-10/26.

Refuge Officers Gamble, Kostinec, and Peterson along with State Conservation Officer Dave Adams, set up a decoy deer on the refuge on the evening of 12/10. Although this date was within the firearms deer season and we had a number of stop-and-looks, no shots were fired.

## I. EQUIPMENT AND FACILITIES

### 1. New Construction

The 5.5 million dollar construction fund appropriated in 1992 for the new office/visitor center was recinded early this year. This action resulted from inaction. No one from the regional office (engineering or refuges) or from the field station were pushing the issue forward.

Refuge staff initiated dozer and scraper dirt work within the Upper Burgess Marsh following spring flood conditions. Culvert installation was also a part of the project. These efforts are in preparation for a new interpretive walkway that will be developed with access from K130. The project will be developed over an approximate two year period, depending on availability of funding and staff time.

Equipment Operator Laws constructed several islands within the Hartford Marsh Unit during October. These should provide suitable roosting and loafing areas for waterfowl and other water birds.

### 2. Rehabilitation

The water control structure in Burgess Marsh was rehabilitated in July.

A total of 16,970 tons of gravel was delivered and spread on refuge roads and trails during the June-July period. Funding for this contract work came from a supplemental flood damage appropriation.

Maintenance Worker Thuma repainted gates and signs located on the north side of the refuge. This work was completed in July in preparation for the fall closure of that area.

An 18" road culvert was replaced one-half mile west of the Maxwell pump site in November.

Rehabilitation work utilizing a backhoe was completed on the Burgess pump site to make it functional following flood damage.

#### 4. Equipment Utilization and Replacement

The following is a list of replacement vehicles and equipment acquired this year and the month received:

- John Deere Model 6400 4x4 tractor - January
- Ford Ranger 4x4 ½ ton for the Private Lands Program - May
- John Deere 410 D loader/backhoe - May
- Millermatic wire welder - May
- 1-ton GMC Sierra 4x4 cab/chassis for fire pumper unit - June
- Ford ½ ton pick up truck (replacement) - June
- Hillsboro 30 ft. goose-neck trailer for hauling equipment to MDC - June
- Ford F-700 cab/chassis (21,000 GVW) to replace 1969 model used for 1000 gal. fire tanker - July
- Polaris Magnum 4x4 ATV for use at MDC - July
- Bobcat 763 Skid Loader for trail maintenance and loading purposes - July
- Bush Hog Model 2315 15' mower for noxious weed control - September

Major equipment repairs this year included \$4800 in brake and hydraulic work on the John Deere motor grader, and \$1300 worth of repairs to the John Deere 2440 tractor.

Staff traveled to area military bases several times during the year to screen for excess property, the first source of supply. Items obtained included equipment, tools, and various other supplies. The original acquisition cost of these items totals over \$165,000. Most of the items have been transferred to other stations.

#### 5. Communications Systems

One Spectra A4 Mobile 50 Watt radio was acquired.

#### 6. Computer Systems

The addition of two Hewlett Packard (OmniBook 4000C) laptop computers enabled us to do some work off station. These units will no doubt gain in popularity as staff become more familiar with utilizing them.

### J. OTHER ITEMS

#### 1. Cooperative Programs

Under the terms of an Memorandum of Understanding (MOU) the refuge assisted the Lyon County Fire District #5 with numerous fires throughout the year. This same agreement allowed the fire department use of our 1,000 gallon tanker unit. The fire department provides storage for the tanker.

ROS Kostinec met with the local fire department board members on 5/31 to discuss terms of our agreement with them.

The station assisted the COE with the cleaning of the Hartford Boat Ramp during the year.

### 3. Items of Interest

Associate Manager Bob Nagel met with staff and visited several project sites on 10/12-10/13.

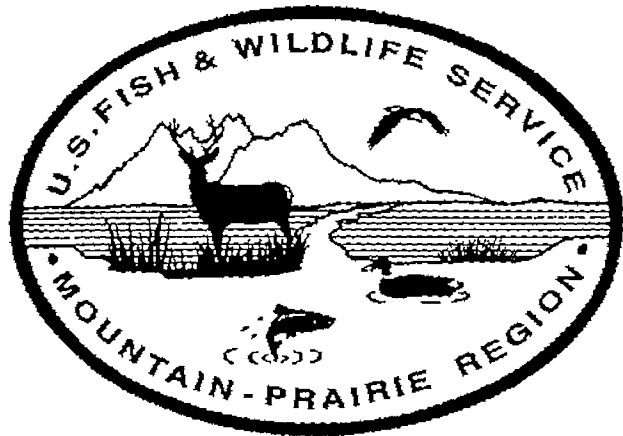
PL Gamble attended the COKANUT Project Leaders meeting in Breckenridge, CO. from 10/16-10/19.

### 4. Credits

Project Leader Gamble authored the report (completed 8/97).

ROS Kostinec and ASA Burton provided editing services.

ASA Burton prepared the final report for distribution.





FLINT HILLS NATIONAL WILDLIFE REFUGE COMPLEX  
MARAIS DES CYGNES NATIONAL WILDLIFE REFUGE  
Trading Post, Kansas

ANNUAL NARRATIVE REPORT  
Calendar Year 1995

U.S. Department of the Interior  
Fish and Wildlife Service  
NATIONAL WILDLIFE REFUGE SYSTEM

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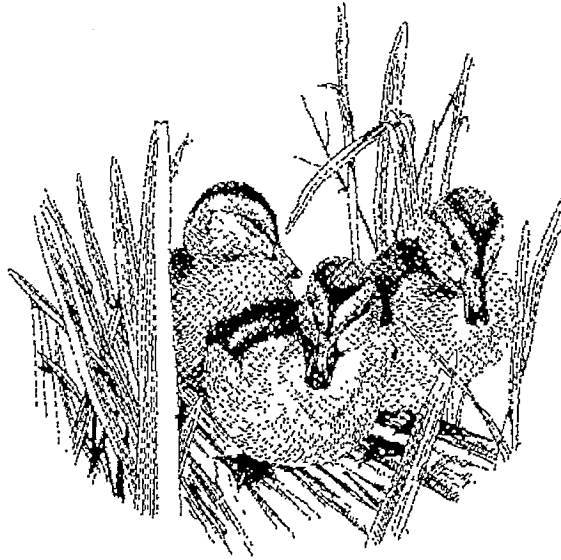
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## INTRODUCTION

The Marais des Cygnes National Wildlife Refuge (MDC NWR) was established on August 8, 1992 with the purchase of 5,836 acres in Linn County, eastern Kansas. The land purchased lies within a 9,300 acre boundary and is adjacent to the State-managed Marais des Cygnes Wildlife Area. The refuge, the fourth in Kansas, is located near the town of Trading Post about 50 miles south of Kansas City and protects one of the state's richest concentrations of plants and animals.

The lower Marais des Cygnes River drainage holds some of the largest tracts of remnant forest along the western edge of North America's eastern deciduous forests, just where the forests open up to the tall grass prairie. Along the river, six miles of which are within the refuge, wetlands are inundated whenever the rises, watering a paradise for wildlife. The refuge protects tracts of high quality Eastern Floodplain Forest, only a few of which remain in Kansas. The forest features oaks and hickories and the forested wetland comprises old growth and old second growth trees with a diverse under story. In all, 12 species which are federally listed as threatened or endangered and 14 which are in need of conservation have been identified in Linn County. They include Peregrine Falcon, Least Tern, Piping Plover and Mead's Milkweed. The area is also a mecca for bird life, harboring 315 species. Among these, most in need of habitat are the song birds, including five migratory stopover sites for shorebirds and one of the preeminent waterfowl concentration sites in Kansas. The refuge is also called home for 58 species of reptiles and untold numbers of fish, amphibians, mussels and other invertebrates. Nearly 800 species of higher plants have been identified in Linn County.

The town of Trading Post, located on the northeast corner of the refuge, is the oldest continuous settlement still existing in Kansas, founded by French traders in about 1825. They named the river Marais des Cygnes, which means marsh of the swans, thought to be a misinterpretation of the Osage Indian name for the area, 'the place of many swan'. The historic Fort Scott Military Post road passes through the refuge. The road was constructed through the Indian territory to connect Fort Leavenworth, Kansas and Fort Bison, Oklahoma and was traveled by soldiers, immigrants, Indians, missionaries, outlaws and traders. The road also served as a boundary, west of which the Indians were to enjoy the lands without fear of molestation by white settlers. By the late 1850's drift mines and deep shaft mines were used to extract coal until technology was developed for open pit mining. Several pits and reclaimed sites are present on the refuge. In 1858, five people were murdered and five wounded by pro-slavery ruffians.

This caused John Brown, a notorious abolitionist, to establish a fort and patrol the area. The site of the murders is located two

miles north of the refuge and is a State Historic Site. In 1864, at Trading Post, the opening shots were fired in the most notable Civil War battle in Kansas. Several thousand Confederate cavalry routed by stronger troops led by Union General Alfred Pleasanton. From Trading Post the Battle of Mine Creek was fought across the Marais des Cygnes River and several miles to the south. The battle was the largest cavalry engagement of the Civil War and involved nearly 25,000 troops. Much of the Civil War History of the area is interpreted by several local museums and at Historic Fort Scott, a Park Service facility 28 miles to the south.

#### A. HIGHLIGHTS

Seasonal Biotech hired to gather baseline data. (Section E.1).

Master Planning changes to Comprehensive Management Planning. (Section D.1).

#### B. CLIMATIC CONDITIONS

No weather recordings.

#### C. LAND ACQUISITION

##### 1. Fee Title

One small tract of land was closed on this year, a 33.20 acre parcel was purchased from Tylers on February 10, 1995.

##### 3. Other

ASA Fennell met with RO Realty Appraisers Jack Hise and Lorena Trujillo on 5/17 to discuss tenant problems and to meet with local realtors for rental rate property rate comparisons.

#### D. PLANNING

##### 1. Master Plan

PL Gamble, ROS Kostinec, and ASA Fennell met with Harvey Wittmier and Adam Misztal from the Regional Office Realty Planning Division on 8/29 to discuss the need for Comprehensive Management Planning. Also in attendance were Marais des Cygnes State Wildlife Area Managers Karl Karrow and Barry Allen. Tasks for the CMP were assigned and the need for the involvement of additional planning team members was discussed.

Cartographer Bob Schneider from the RO completed soil and habitat maps for the CMP.

On 12/5 Regional Land Use Specialist Steve Berlinger toured the refuge with RM Gamble, ASA Fennell, and Biotech Minnerath to review land use planning.

#### 5. Research and Investigations

Biotech Smith initiated a neotropical bird survey to determine relative abundances of species by month of the year and habitat. Baseline data regarding breeding season use and year-round use by resident species are also objectives.

### E. ADMINISTRATION

#### 1. Personnel

The refuge is managed out of the Flint Hills NWR office in Hartford KS, 2 hours away.

#### 5. Funding

Table 1. Three Year Station Funding Level (Amount \$K)

FY	Oper 1261	Maint 1262	MMS	Flood	8260	9110	9120	1120	Total	Total Salaries
96	15.0	68.0							83.0	
95	10.0	23.5							33.5*	
94	9.0	20.0							29.0	
*\$1,000 of this fund came from Kansas Department of Wildlife and Parks ('Chickadee Checkoff').										

Major projects have included asbestos abatement, plugging abandoned wells, and cleaning up dump piles.

### F. HABITAT MANAGEMENT

#### 2. Wetlands

Biotech. Middleton and ASA Fennell attended a Kansas Wildlife and Parks sponsored Moist Soil Management course, taught by University of Missouri personnel, held at the Marais des Cygnes Wildlife Area State office on 9/28.

#### 4. Croplands

All farming is conducted with lease extensions on land formerly owned by P&M Coal Company. A total of 1,911 acres were planted by 4 farmers.

Table 2. 1995 Cooperative Farming Agreements

Crop	# of Cooperators	Acres Planted
Corn	2	194
Milo	4	586
Sunflowers		
Alfalfa		
Clover	1	131
Soybeans	3	693
Wheat	2	307

Government crop shares stayed in the field.

#### 7. Grazing

A Special Use Permit was issued to graze 80 acres of fescue.

#### 8. Haying

A Special Use Permit was issued to hay 65 acres of fescue.

#### 10. Pest Control

Pest control at this time is limited to the chemicals that are approved for the farming program.

Pesticides approved for 1995 were Accent, Beacon, Roundup, Rodeo, Amine 4, Poast and Scepter.

### G. WILDLIFE

#### 2. Endangered and/or Threatened Species

On 6/16, ASA Fennell assisted a permit holder from the University of Missouri with the collection of State Threatened flat-floater mussels. Ground truthing of habitat maps was also accomplished.



## H. PUBLIC USE

### 1. General

The refuge is currently closed to all public entry, until planning is completed, and staff and funding are available.

### 6. Interpretive Exhibits/Demonstrations

On 9/24, ASA Fennell set up a Refuge display to serve as a promotion for National Wildlife Refuge Week at Trading Post, KS. during the communities Pioneer Days.

### 17. Law Enforcement

The refuge is patrolled by state officers and one FWS Special Agent out of Kansas City, KS.

Table 3. Violation Notices - Three Year Pattern

Year	Number of Notices
1995	0
1994	2
1993	2
1992	3

RM Gamble and ASA Fennell coordinated refuge law enforcement activities with FWS Special Agent Case Vendel. Case along with State Kansas Wildlife and Parks Officer Terry Mills have effectively established a law enforcement presence at MDC.

## I. EQUIPMENT AND FACILITIES

### 2. Rehabilitation

Biotech Minnerath and Range Tech Peterson repaired the roof on the refuge house on 6/16.

On 6/22-23, Biotech Middleton and Equipment Operator Laws repaired a water control structure (SE 1/4, Sect 5), and rehabed a culvert and refuge road that had severe erosion damage and was a safety problem to refuge farmers (S 1/2, Sect 4).

J. OTHER ITEMS1. Cooperative Programs

Seasonal Biotech Smith assisted the adjacent State Wildlife Area personnel with field projects during the first two weeks of October.

The house on the hill outside Trading Post, Kansas was maintained in moth ball status.

4. Credits

Project Leader Gamble authored the report (completed 10/97).

ASA Burton provided editing services and assembled the report.